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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,777	09/22/2003	Yuusuke Kawahara	5405-9	3291

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EXAMINER

TRINH, MICHAEL MANH

ART UNIT PAPER NUMBER

2822

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,777

Applicant(s)

KAWAHARA ET AL.

Examiner

Michael Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

*** This office action is in response to applicant's election filed on March 16, 2005. Claims 1-17 are pending, in which claims 11-17 are non-elected, without traverse.

Election/Restrictions

1. Claims 11-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made without traverse in Paper date March 16, 2005.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Natori et al (JP-11-274671 with English computer translation) taken with Speakman (6,503,831) and Sakamoto (JP-09-320363 with English computer translation).

Re claim 1, Natori teaches (at Figs 1-30; English translation paragraphs [0008]-[0057]) a manufacturing method of a circuit substrate, in which an electronic circuit is formed on a surface of a base member by a solution jetting device, the manufacturing method comprising: supplied into a nozzle 211 (Figs 1,29; paragraphs [0017]+) having a small diameter, and includes a plurality of fine particles to form an electronic circuit by melting and sticking to one another, and

a dispersant for dispersing the fine particles, from the discharge port toward the surface of the base member using a control circuit 5 by applying an electrical potential difference between the electrodes so as to supply a voltage of an arbitrary waveform to the solution to charge the solution (paragraphs 0021-0024); and exposing the jetted liquid drops received on the surface of the base member to light or heat to make the fine particles solution which is melt and stick to a one another (paragraphs 20,28-31). Re claims 3-5, wherein the fine particles are made of a conductive material, semi-conductive material, an insulating material or a dielectric material.. (English translation of Claim 4, page 1 of 3; and paragraphs 0013,0025,0028,0037-0043-0047). Re further claim 10, as similar applied to claim 1, Natori also teaches (at paragraphs 0012,0029,0030,0047,0025-0028) the step of removing particles other than the thing adhering to an adhesive ingredient particles from a pattern formation side, wherein agent or binder can be added if needed to the solution including the plurality of fine particles.

Re claims 1,6-9, Natori does not mentioning the diameter of the nozzle of 0.1 to 100 micron in claim 1 (with 30 micron in claim 6, 20 micron in claim 7, 8 micron in claim 8, and 4 micron in claim 9); and Re claim 2, particle has a diameter of lower than or equal 100nm.

However, Speakman teach jetting a plurality of droplets on a surface to form a patterned electronic device by employing an electrostatic spray head having nozzles with small diameter of 25 micron, preferably less than or equal to 10 micron (Figs 1-2; col 21, lines 65). Sakamoto teaches (at paragraphs 0023-0024) that the electric conductive ink 4 is breathed out once from delivery of small aperture (nozzle) having a diameter of about 0.1 micron. Re claim 2, Sakamoto also teaches (at paragraphs 0011,0034) a plurality of particles having a particle size of 0.1 micrometer or less (0.1 micron = 100 nm).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the electronic circuit patterns of Natori by employing the small nozzles having a small diameter of 25 micron, preferably less than or equal to 10 micron, as taught by Speakman, and about 0.1 micron as taught by Sakamoto, wherein the particle has a diameter size of less than about 100nm as further taught by Sakamoto. This is because of the desirability to form electronic circuit pattern having small dimension so as to increase high density of the integrated circuit. The subject matter as a whole would have been obvious to one or ordinary skill in the art at the time the invention was made to select the portion of the prior


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art's range of diameter of nozzle and particles, as taught by Speakman and Sakamoto, which is within the range of applicant's claims, because it has been held to be obvious to select a value in a known range by optimization for the best results, and would be an unpatentable modification, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation". *In Re Aller* 104 USPQ 233,255 (CCPA 1955); *In re Waite* 77 USPQ 586 (CCPA 1948); *In Re Swanson* 56 USPQ 372 (CCPA 1942); *In Re Sola* 25 USPQ 433 (CCPA 1935); and *In Re Dreyfus* 24 USPQ 52 (CCPA 1934).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (571) 272-1847. The examiner can normally be reached on M-F: 8:30 Am to 5:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0956.
Oacs-16


Michael Trinh
Primary Examiner